

CTCGCTCCAAGTTGTCCAGCCGGGACCGCCTCGGGGTGTCCAGCCGGCTCGCGGAGGCCCTCCTGGGGGCGGGCGCGGGGCGGGCTCGGGG 80  
GGGGCCCTCAGCAGAAAACAGGAAGAACCAGGCTCGGTCCAGTGGCACCCAGCTCCCTACCTCCTGTGCCAGCCGCTGGCCTGTGGCA 180  
GGCCATTCCCAGCGTCCCGACTGTGACCACTTGCTCAGTGTGCCTCTCACCTGCCTCAGTTTCCTCTGCGCGCGCGATCGCGGGGCGAG 270  
H A G R

Sma I

GCTCTCTGGTTTCTGGCGGGCATTTCACGGCTGTGATTCTGCTGAGGAACTTCCCCGGGTGAGCCCCGCTTCTCCGAGCCTGGCACC 360  
G S L V S W R A F H G C D S A E E L P R V S P R F L R A W H

Sma I

CCCCCTCCGTCTCAGCCAGGATGCCAAGAGCGCGCTGGGCCCCGGGCACCCAGTGTATCACCAAATGCGAGCACACCCGCCCCAAGCCAG 450  
P P P V S A R M P T R R W A P G T Q C I T K C E H T R P K P

Stu I

Kpn I

GGGAGCTGGCCTTCCGCAAGCGCGACGTGGTCACCATCCTGGAGGCCTGCGAGAACAAGAGCTGGTACCGCGTCAAGCACACACAGTG 540  
G E L A F R K G D V V T I L E A C E N K S W Y R V K H H T S

Pvu II

GACAGGAGGGGCTGCTGGCAGCTGGGGCCCTGCGGGAGCGGGAGGCCCTCTCCGCAGACCCCAAGCTCAGCCTCATGCCGTGGTTCCACG 630  
G Q E G L L A A G A L R E R E A L S A D P K L S L H P W F H

Pvu II Pst I

GGAAGATCTCGGGCCAGGAGGCTGTCCAGCAGCTGCAGCCTCCCGAGGATCGGCTGTTCTCGGTGCGGGAGTCCGCGCGCCACCCCGGG 720  
G K I S G Q E A V Q Q L Q P P E D G L F L V R E S A R H P G

Cla I

ACTACGTCCTGTGCGTGAGCTTTGCCCGCGACGTCACTCACTACCGCGTGCTGCACCGCGACGGCCACCTCACAATCGATGAGGCCGTGT 810  
D Y V L C V S F G R D V I H Y R V L H R D G H L T I D E A V

TCTTCTGCAACCTCATGGACATGGTGGAGCATTACAGCAAGGACAAGGGCGCTATCTGCACCAAGCTGGTGAGACCAAAGCGGAAACAG 800  
F F C N L M O H V E H Y S K D K G A I C T K L V R P K R K H

Pst I

GGACCAAGTCGGCCGAGGAGGAGCTGGCCAGGGCGGGCTGGTTACTGAACCTGCAGCATTGACATTGGGAGCACAGATCGGAGAGGGAG 990  
G T K S A E E E L A R A G W L L N L D H L T L G A Q I G E G

Pst I

Stu I

AQTTTGGAGCTGTCTGTCAGCGTCACTACCTGGGGCAAAAGGTGGCCGTGAAGAATATCAAGTGTGATGTGACAGCCCAGGCCTTCTCG 1080  
E F G A V L Q G E Y L G Q K V A V K N I K C D V T A Q A F L

ACGAGACGGCCGTCATGACGAAGATGCAACACGAGAACCTGGTGCGTCTCCTGGGCGTGATCCTGCACCAGGGGCTGTACATTGTCATEG 1170  
D E T A V H T K H Q H E N L V R L L G V I L H Q G L Y I V H

Sma I

Pst I

AGCACGTGAGCAAGGGCAACCTGGTGAACCTTCTGCGGACCCGGGGTGGAGCCCTCGTGAACACCGCTCAGCTCCTGCAGTTTCTCTGC 1260  
E H V S K G N L V N F L R T R G R A L V N T A Q L L Q F S L

FIGURE 1A

Hind III

ACGTGCCCCGAGGGCATGGAGTACCTGGAGAGCAAGAAGCTTGTGCACCGCGACCTGGCCCCCGCAACATCCTGGTCTCAGAGGACCTGG 1350  
H V A E G M E Y L E S K K L V H R D L A A R N I L V S E D L

TGCGCAAGGTCAGCGACTTTGGCCTGGCCAAAGCCGAGCGGAAGGGGCTAGACTCAAGCCGGCTGCCCCGTCAGTGGACGGCGCCCGAGG 1440  
V A K Y S D F G L A K A E R K G L D S S R L P V K W T A P E

Nde I

CTCTCAAAACACGGGAAGTTCACCAGCAAGTCGGATGTCTCGAGTTTTGGGGTGCTGCTCTGGGAGGTCTTCTCATATGGACGGGCTCCGT 1630  
A L K H G K F T S K S D V W S F G V L L W E V F S Y G R A P

Kpn I

ACCCTAAAATGTCACCTCAAAGAGGTGTGCGAGGCGGTGGAGAAGGGGTACCGCATGGAACCCCCCGAGGGCTGTCCAGGCCCCGTGCACG 1820  
Y P K H S L K E V S E A V E K G Y R H E P P E G C P G P V H

Pvu II

Sma I

TECTCATGAGCAGCTGCTGGGAGCCAGAGCCCGCCCGCCGCCACCCCTTCGCAAACTGGCCGAGAAGCTGGCCCGGGAGCTACGCAGTG 1710  
Y L M S S C W E A E P A R R P P F R K L A E K L A R E L R S

CAGGTGCCCCAGCCTCCGTCTCAGGGCAGGACGCCGACGGCTCCACCTCGCCCCGAAGCCAGGAGCCCTGACCCCA'CCCGTGGGGCCCT 1800  
A G A P A S V S G O D A D G S T S P R S O E P

TGGCCCCAGAGGACCGAGAGAGTGGAGAGTGGGGCGTGGGGGCACTGACCAGGCCCAAGGAGGGTCCAGGCGGGCAAGTCATCCTCCTGG 1890

TGCCCCACAGCAGGGGCTGGCCCCACGTAGGGGGCTCTGGGCGGCCCCGTGGACACCCACAGACCTCCGAAGGATGATCGCCCCATAAAGACGG 1980

ATTCTAAGGACTCTAAAAAA 2000

FIGURE 1B

CCGCTTTTGTCTTAGAGCTTGAGAGTCAAAG

CCCACATGTATACTTCGGCTCTAGCGAGT

TCGATAATATGGATACAA

M D T

126509

AAATCTATTCTAGAAGAACTTCTTCTCAAAAGATCACAGCAAAAGAAGAAAATGTCACCAAATAATTACAAAGAACGGCTTTTGTGTTTG 180

K S I L E E L L L K R S O O K K K M S P N N Y K E R L F V L

ACCAAAACAAACCTTTCCTACTATGAATATGACAAAATGAAAAGGGGCAGCAGAAAAGGATCCATTGAAATTAAGAAAATCAGATGTGTG 270

T K T N L S Y Y E Y D K M K R G S R K G S I E I K K I R C V

GAGAAAGTAAATCTCGAGGAGCAGACGCCTGTAGAGAGACAGTACCCATTTTCAGATTGTCTATAAAGATGGGCTTCTCTATGTCTATGCA 360

E K V N L E E O T P V E R Q Y P F Q I V Y K D G L L Y V Y A

PH

TCAAATGAAGAGAGCCGAAGTCAGTGGTTGAAAGCATTACAAAAGAGATAAGGGGTAACCCCCACCTGCTGGTCAAGTACCATAGTGGG 450

S N E E S R S O W L K A L Q K E I R G N P H L L V K Y H S G

TTCTTCGTGGACGGGAAGTTCCTGTGTTGCCAGCAGAGCTGTAAAGCAGCCCCAGGATGTACCCTCTGGGAAGCATATGCTAATCTGCAT 540

F F V D G K F L C C O O S C K A A P G C T L W E A Y A N L H

ACTGCAGTCAATGAAGAGAAACACAGAGTTCACCTTCCCAGACAGAGTGCTGAAGATACCTCGGGCAGTTCCTGTTCTCAAAATGGAT 630

T A V N E E K H R V P T F P D R V L K I P R A V P V L K M D

GCACCATCTTCAAGTACCACTCTAGCCCAATATGACAACGAATCAAAGAAAACTATGGCTCCCAGCCACCATCTTCAAGTACCAGTCTA 720

A P S S S T T L A Q Y D N E S K K N Y G S O P P S S S T S L

SH3

GCGCAATATGACAGCAACTCAAAGAAAATCTATGGCTCCCAGCCAACTTCAACATGCAGTATATTCCAAGGGAAGACTTCCTGACTGG 810

A Q Y D S N S K K I Y G S O P N F N M O Y I P R E D F P D W

TGGCAAGTAAGAAAACTGAAAAGTAGCAGCAGCAGTGAAGATGTTGCAAGCAGTAACCAAAAAGAAAGAAATGTGAATCACACCACCTCA 900

W Q V R K L K S S S S S E D V A S S N O K E R N V N H T T S

AAGATTTTCATGGGAATTCCTGAGTCAAGTTCATCTGAAGAAGAGGAAAACCTGGATGATTATGACTGGTTTGTCTGGTAACATCTCCAGA 990

K I S W E F P E S S S S E E E E N L D D Y D W F A G N I S R

TCACAATCTGAACAGTTACTCAGACAAAAGGGAAAAGAAGGAGCATTATGTTAGAAATTCGAGCCAAGTGGGAATGTACACAGTGTCC 1080

S O S E O L L R O K G K E G A F M V R N S S O V G M Y T V S

SH2

TTATTTAGTAAGGCTGTGAATGATAAAAAGGAACTGTCAAACATTACCACGTGCATACAAATGCTGAGAACAAATTATACCTGGCAGAA 1170

L F S K A V N D K K G T V K H Y H V H T N A E N K L Y L A E

AACTACTGTTTTGATTCCATTCCAAAGCTTATTCAATTATCATCAACACAATTCAGCAGGCATGATCACACGGCTCCGCCACCCTGTGTCA 1260

N Y C F D S I P K L I H Y H Q H N S A G M I T R L R H P V S

ACAAAGGCCAACAAGGTCCCCGACTCTGTGTCCCTGGGAAATGGAATCTGGGAACTGAAAAGAGAAGAGATTACCTTGTTGAAGGAGCTG 1350

T K A N K V P D S V S L G N G I W E L K R E E I T L L K E L

GGAAGTGGCCAGTTTGGAGTGGTCCAGCTGGGCAAGTGAAGGGGCAGTATGATGTTGCTGTTAAGATGATCAAGGAGGGCTCCATGTCA 1440

G S G O F G V V O L G K W K G O Y D V A V K M I K E G S M S

GAAGATGAATTCTTTCAGGAGGCCAGACTATGATGAAACTCAGCCATCCCAAGCTGGTTAAATTCTATGGAGTGTGTTCAAAGGAATAC 1530

E D E F F O E A O T M M K L S H P K L V K F Y G V C S K E Y

CCCATATACATAGTGACTGAATATATAAGCAATGGCTGCTTGCTGAATTACCTGAGGAGTCACGGAAAAGGACTTGAACCTTCCCAGCTC 1620

P I Y I V T E Y I S N G C L L N Y L R S H G K G L E P S O L

Tk

TTAGAAATGTGCTACGATGTCTGTGAAGGCATGGCCTTCTTGAGAGTCACCAATTCATACACCGGGACTTGGCTGCTCGTAACTGCTTG 1710

L E M C Y D V C E G M A F L E S H Q F I H R D L A A R N C L

GTGGACAGAGATCTCTGTGTGAAAGTATCTGACTTTGGAATGACAAGGTATGTTCTTGATGACCAGTATGTCAAGTTCAGTCGGAACAAAG 1800

V D R D L C V K V S D F G M T R Y V L D D O Y V S S V G T K

FIGURE 2A

TTCCAGTCAAGTGGTCAGCTCCAGAGGTGTTTCATTACTTCAAATACAGCAGCAAGTCAGACGTATGGGCATTTGGGATCCTGATGTGG 1890  
F P V K W S A P E V F H Y F K Y S S K S D V W A F G I L M W

GAGGTGTTTCAGCCTGGGGAAGCAGCCCTATGACTTGTATGACAACTCCCAGGTGGTTCTGAAGGTCTCCCAGGGCCACAGGCTTTACCGG 1980  
E V F S L G K Q P Y D L Y D N S Q V V L K V S Q G H R L Y R

CCCCACCTGGCATCGGACACCATCTACCAGATCATGTACAGCTGCTGGCACGAGCTTCCAGAAAAGCGTCCCACATTTTCAGCAACTCCTG 2070  
P H L A S D T I Y Q I M Y S C W H E L P E K R P T F Q Q L L

TCTTCCATTGAACCACTTCGGGAAAAAGACAAGCATTGAAGAAGAAATTAGGAGTGCTGATAAGAATGAATATAGATGCTGGCCAGCATT 2160  
S S I E P L R E K D K H

TTCATTCATTTTAAGGAAAGTAGCAAGGCATAATGTAATTTAGCTAGTTTTTAATAGTGTTCTCTGTATTGTCTATTATTTAGAAATGAA 2250

CAAGGCAGGAAACAAAAGATTCCCTTGAAATTTAGGTCAAATTAGTAATTTTGTATTGCTGCCCCTGATATAAACTTTCCAGCCTATA 2340

GCAGAAGCACATTTTCAGACTGCAATATAGAGACTGTGTTTCATGTGTAAAGACTGAGCAGAACTGAAAAATTACTTATTGGATATTCATT 2430

CTTTTCTTTATATTGTCATTGTCACAACAATTAATATACTACCAAGTACAAAAAAAAAAAAAAAAAAAAA 2500

FIGURE 2B

CCGGACTGGTCGAAAGACAGGAACAGACTTGAACACGGGGAGAGCTCCTGGCGAAACGAAGACGTGGAGGTTTTACCAGGGATAAGAAG 90  
AAAAGACACCTTCTAGTGAGCAGCTGCCAGCTCCTGCTCAGTTTTGCCTCGGGGTAGCACCTCCAGCCACAGAAAGCAAGCCGGTAAG 180  
TCTCTCCAGGTAGGACTTGCTGCAACCCAGCTGCTGGACTGATCTGAAACGGGACTTTGCATACTCTCCGAAGTATGGTGAGTTGGTGCT 270  
H V S W C  
GACTTCAAAGTTGCCTGGTGAAGGAAGATAAGGTGGATCGCAGAGACTAAGGGGAGAGGGAGAAGCCCTGCTCCTCTTCTCCCCACCAAG 360  
GCACAATCAGCAACATCTGTCTAGAGGCTCTGGGAGTACCTAGAACCCTATCTCCCCTGTTTGTCCACGGAGGCAGACAAGTCAACCGTGA 450  
H S N I C O R L W E Y L E P Y L P C L S T E A D K S T V  
TTGAAAATCCAGGGGCGCTTTTCTCTCCCCAGTCACAGAGGCATGGCCACTACTTTGTGGCTTTGTTTCATTACCAGGCTCGGACTGCTG 540  
I E N P G A L C S P O S O R H G H Y F V A L F D Y Q A R T A  
AGGACTTGAGCTTCCGAGCAGGTGACAACTTCAAGTTCTGGACACTTTGCATGAGGGCTGGTGGTTTCCAGACACTTGGAGAAAAGAC 630  
E D L S F R A G D K L Q V L D T L H E G W W F A R H L E K R  
CAGATGGCTCCAGTCAGCAACTACAAGGCTATATTCTTCTAACTACGTGGCTGAGGACAGAAGCCTACAGGCAGAGCCGTGGTTCTTTG 720  
R D G S S Q Q L Q G Y I P S N Y V A E D R S L Q A E P W F F  
CAGCAATCGGAAGATCAGATGCAGAGAAACAACCTATTATATTGAGAAAACAAGACCGTTCTTTCTAATCAGAGAAAGTGAAGCCAAA 810  
G A I G R S D A E K O L L Y S E N K T G S F L I R E S E S O  
AAGGAGAATTCTCTCTTTTCTAGTTTGTAGTGGAGCAGTTGTAAAACACTACAGAATTAAGAGCTGGATGAAGGGGATTTTTTCTCACGC 900  
K G E F S L S V L D G A V V K H Y R I K R L D E G G F F L T  
GAAGAAGAATCTTTTCAACACTGAACGAATTTGTGAGCCACTACACCAAGACAAGTACCGGCTGTGTGTCAAGCTGGGGAACCATGCT 990  
R R R I F S T L N E F V S H Y T K T S D G L C V K L G K P C  
TAAAGATCCAGGTCCCAGCTCCATTTGATTTGTGCTATAAAACCGTGGACCAATGGGAGATAGACCGCAACTCCATACAGCTTCTGAAGC 1080  
L K I O V P A P F D L S Y K T V D Q W E I D R N S I O L L K  
GATTGGGATCTGGTCAGTTTGGCGAAGTATGGGAAGGTCTGTGGAACAATACCACTCCAGTAGCAGTGAAAACATTAAAACCAGGTTCAA 1170  
R L G S G Q F G E V W E G L W N N T T P V A V K T L K P G S  
TGGATCCAAATGACTTCTGAGGGAGGCACAGATAATGAAGAACCTAAGACATCCAAAGCTTATCCAGCTTTATGCTGTTTGCAGTTTAG 1260  
H D P N D F L R E A Q I M K N L R H P K L I Q L Y A V C T L  
AAGATCCAATTTATATTATTACAGAGTTGATGAGACATGGAAGTCTGCAAGAATATCTCCAAAATGACACTGGATCAAAAATCCATCTGA 1350  
E D P I Y I I T E L M R H G S L Q E Y L Q N D T G S K I H L  
CTCAACAGGTAGACATGGCGGCACAGGTTGCCTCTGGAATGGCCTATCTGGAGTCTCGGAAGTACATTACAGAGATCTGGCTGCCAGAA 1440  
T Q O V D H A A Q V A S G M A Y L E S R N Y I H R O L A A R  
ATGTCCTCGTTGGTGAACATAATATCTACAAAGTAGCAGATTTTGGACTTGCCAGAGTTTTTAAGGTAGATAATGAAGACATCTATGAAT 1530  
N Y L V G E H N I Y K V A D F G L A R V F K V D N E D I Y E  
CTAGACACGAAATAAAGCTGCCGGTGAAGTGGACTGCCCGGGAAGCCATTCTAGTAATAAATTCAGCATTAAAGTCCGATGTATGGTCAT 1620  
S R H E I K L P V K W T A P E A I R S N K F S I K S D V W S  
TTGGAATCCTTCTTTATGAAATCATTACTTATGGCAAAATGCCTTACAGTGGTATGACAGGTGCCAGGTAATCCAGATGTTGGCTCAA 1710  
F G I L L Y E I I T Y G K M P Y S G M T G A Q V I Q M L A O  
ACTATAGACTTCCGCAACCATCCAAGTGTCCACAGCAATTTTACAACATCATGTTGGAGTGCTGGAATGCAGAGCCTAAGGAACGACCTA 1800  
H Y R L P Q P S N C P Q Q F Y N I M L E C W N A E P K E R P

SH3

SH2

TK

FIGURE 3A

CATTTGAGACACTGCGTTGGAACTTGAAGACTATTTTGAACAGACTCTTCATATTCAGATGCAAATAACTTCATAAGATGAACACTCG 1890  
T F E T L R W K L E D Y F E T D S S Y S D A N N F I R .  
AGAAGAATATCAAATAATAAAGTAGCAAAACAAATTCAAATAATCCATTCCAAAATACAATGTTATCAACCAACTGCACAATCAGTTTAT 1880  
CCTGACATATTCAGTGATAGGATAAAGTTGGCCATGTATTATGAAAAAGATTATTTGTGCATTTTATTGACTGGGCAACACTGCAGGAC 2070  
AGTCAAGGTCATATATAATTGCTCACTGCCTGGAAAATTAAGCACACTAAACCAAGTTATTTTTCTTTTAAAGAGATACTTACATTTCCA 2160  
TTTATTGTTTGAAATGTCGCGATCAAGAGAATCAACAGATGATAGTCCAATTTTACTCAGTGACTGTGTAGCATTTTTCTGTTTAC 2250  
TGATTAGAGTGGTTATTCATTATTCCTCAGATTGCTGAATCCCATCAGGCTGTTATTATGAAGGAATTTGATTGCTTTGCTGCACAGCAG 2340  
GACCTGTGCTTTGAGATTTTTTTTTTCTCTTTTAAATATCCTGTAACCTACAATCATGGTAAAGCCATGTTAAATGACTTGATTGTACTTG 2430  
GACTAATTGCACATTTTTTTCTATGCATAAAAAAATGATGCAGCTGTTGAGAAAACGAAGTCTTTTTCATTTTGCAGAAGGAAATGATCG 2520  
AATTTTTCTGTACTTCAGTATGTGTCAACTGAGAGTCATATACATTAGTTTTAATCTCTTAATATTGAGAATCAGGTTGCAAAACGGATG 2610  
AGTTATTATCTATGCAAATGTGAGAAATGTCTAATAGCCCATAAAGTCTGAGAAATAGGTATCAAAATAGTTTAGGAAAATGAGAGGAGA 2700  
ACAGTAGGATTGCTGTGGCCTAGACTTCTGAGTAATTAATAAAGAAAAAGAAGTACCAAAAAAAAAAAAAA 2770

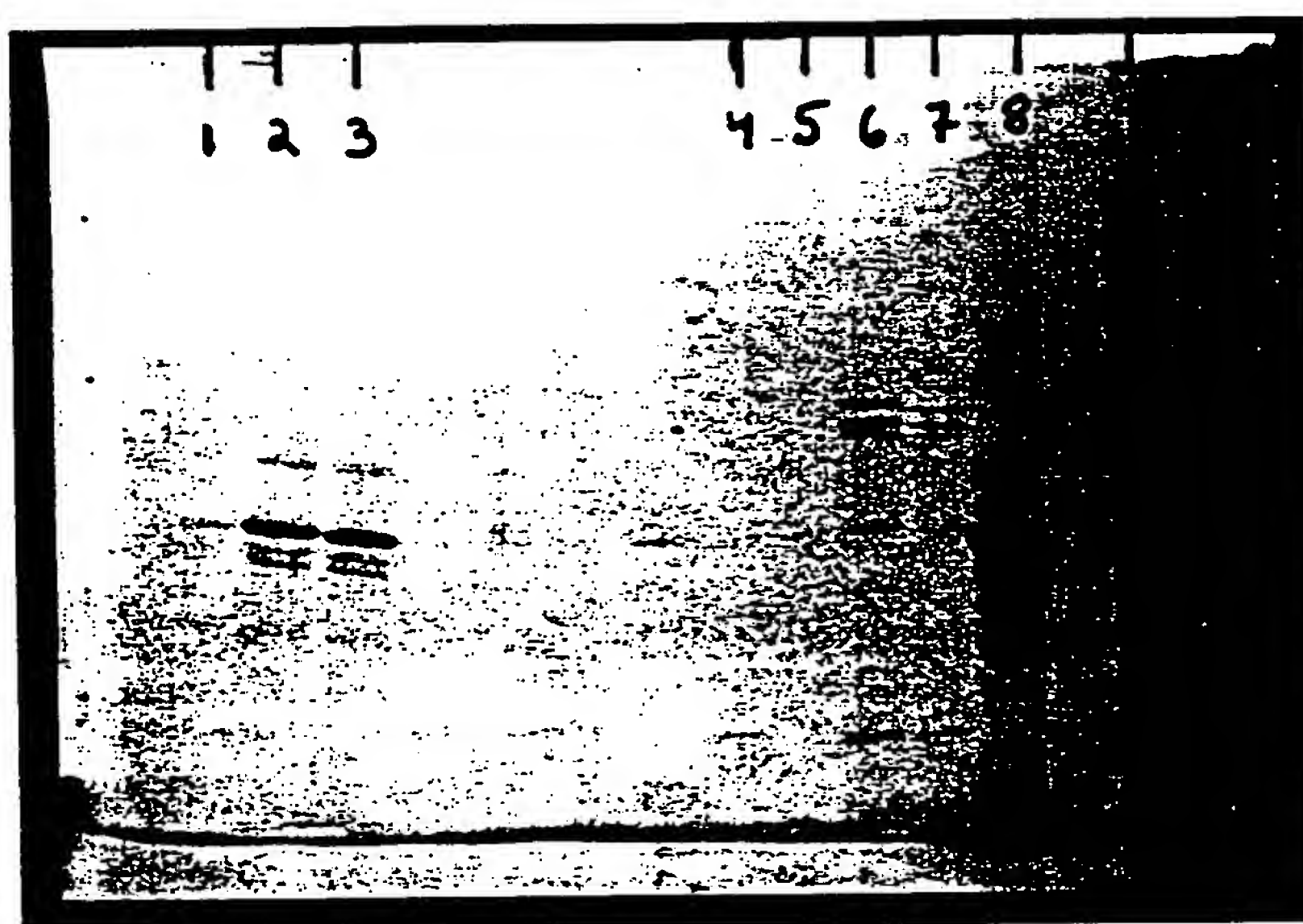
FIGURE 3B

# Expression of MKK1 and MKK2 <sup>08</sup> 426509

		<u>MKK1</u>	<u>MKK2</u>
<b>Human</b>			
Meg/Eryth	Meg-01	+++	+++
	K562	++	+
	Mo7e	++	+
	HEL	+++	++
Myelo/Mac	KG-1	+	++
	HL-60	+	+
	TF-1	+	+
B-cell	ALL-1	-	+
	Raji	-	-
	Daudi	-	-
T-cell	Molt-3	-	-
	Jurkat	-	-
Epithelial	Hela	-	-
<b>Rodent</b>			
	BM	+	+++
	Spleen	+++	+
	Thymus	-	-
	Liver	-	-
	Brain	+	-
rat neural	P19	+	-

**FIGURE 4**

**Immunoprecipitation Of In Vitro Transcribed  
Translated MKK1 And MKK2 Proteins**



**FIGURE 5**



## Antisense MKK1 Expression Suppresses AChE Production In Primary Murine Bone Marrow Cultures

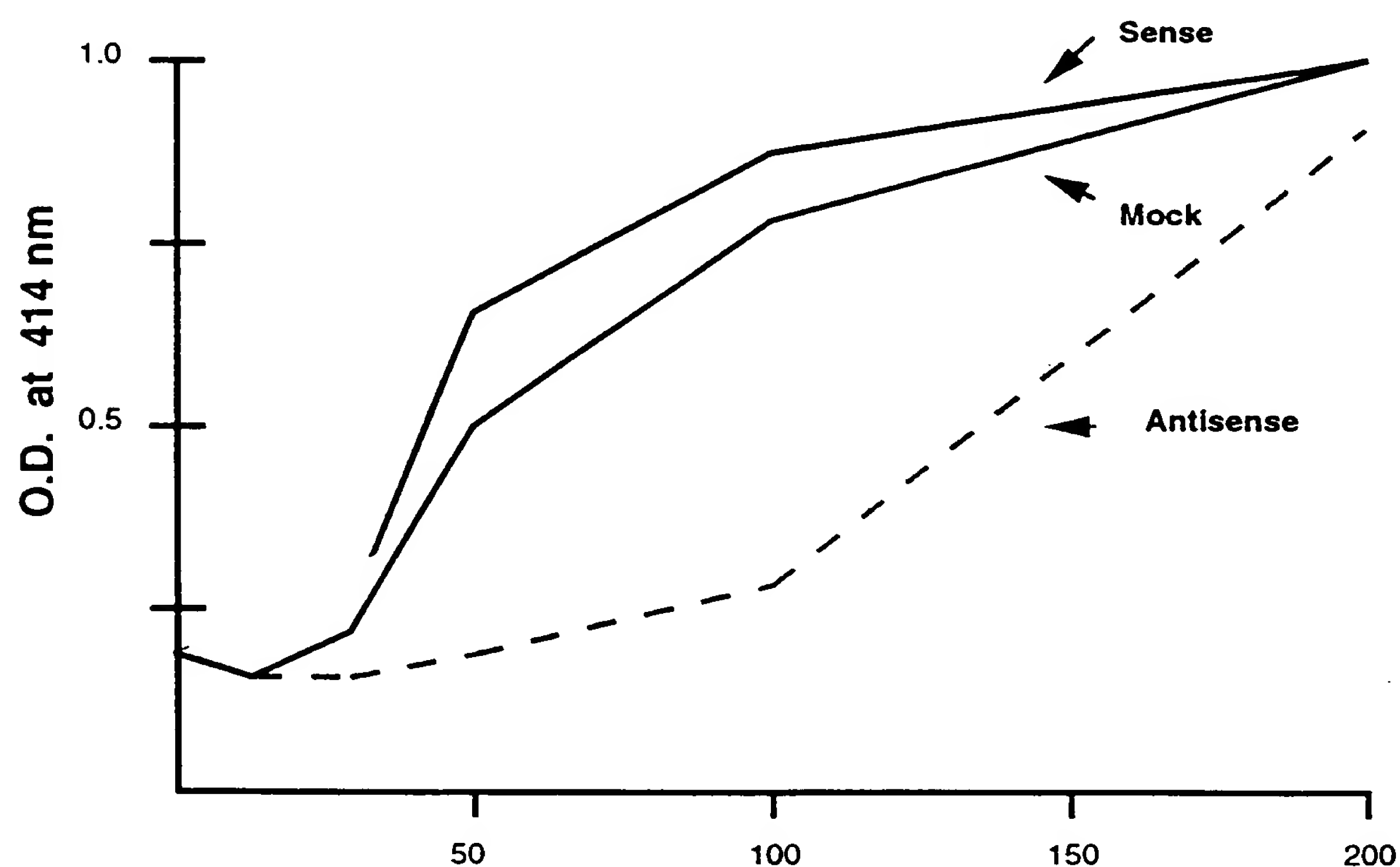


FIGURE 6A

Cell Number x  $10^3/200$  ul

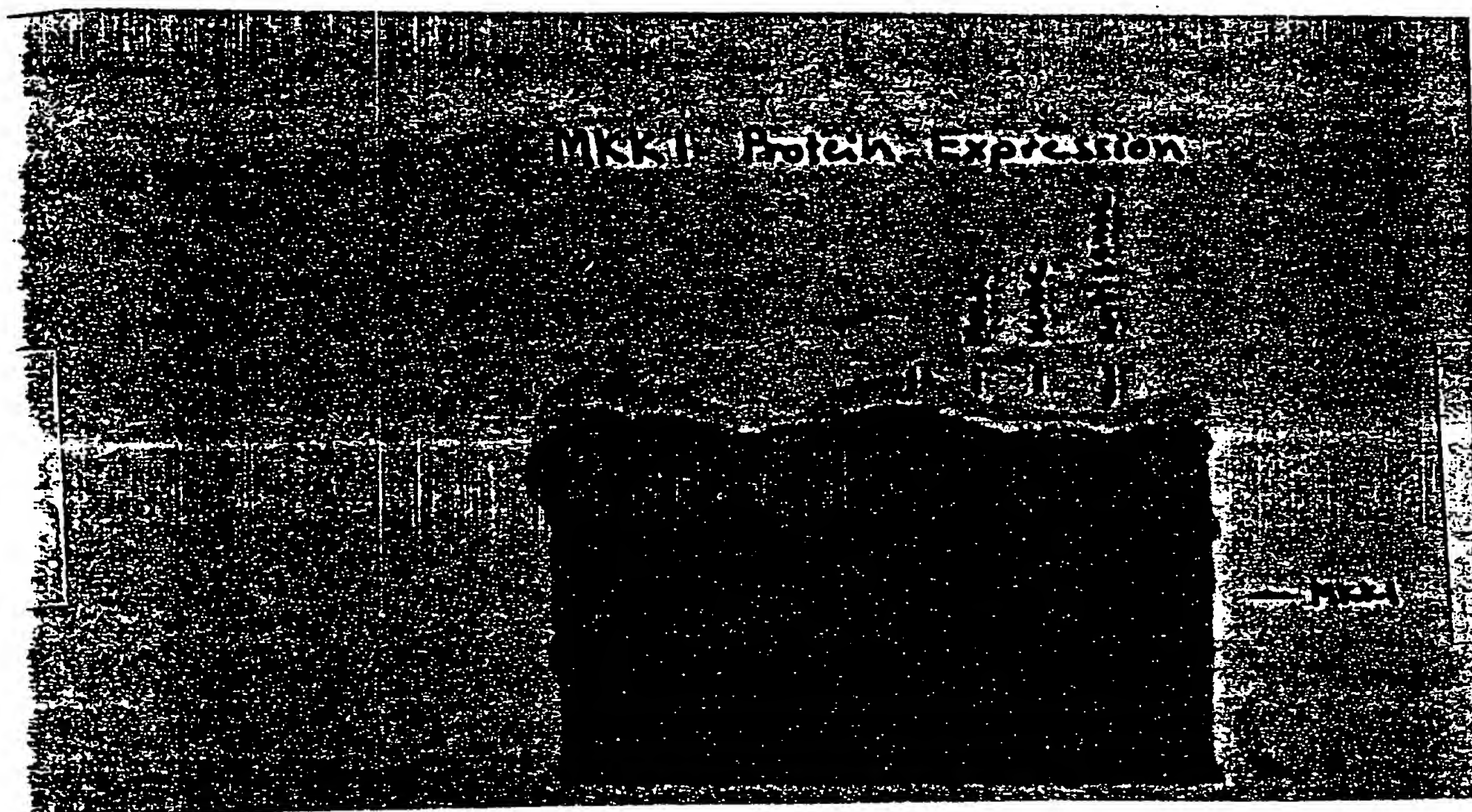


FIGURE 6B

MKK2 AND MKK3 AUTOPHOSPHORYLATE  
TRANSPHOSPHORYLATE PROTEINS WHEN EXPRESSED IN BACTERIA

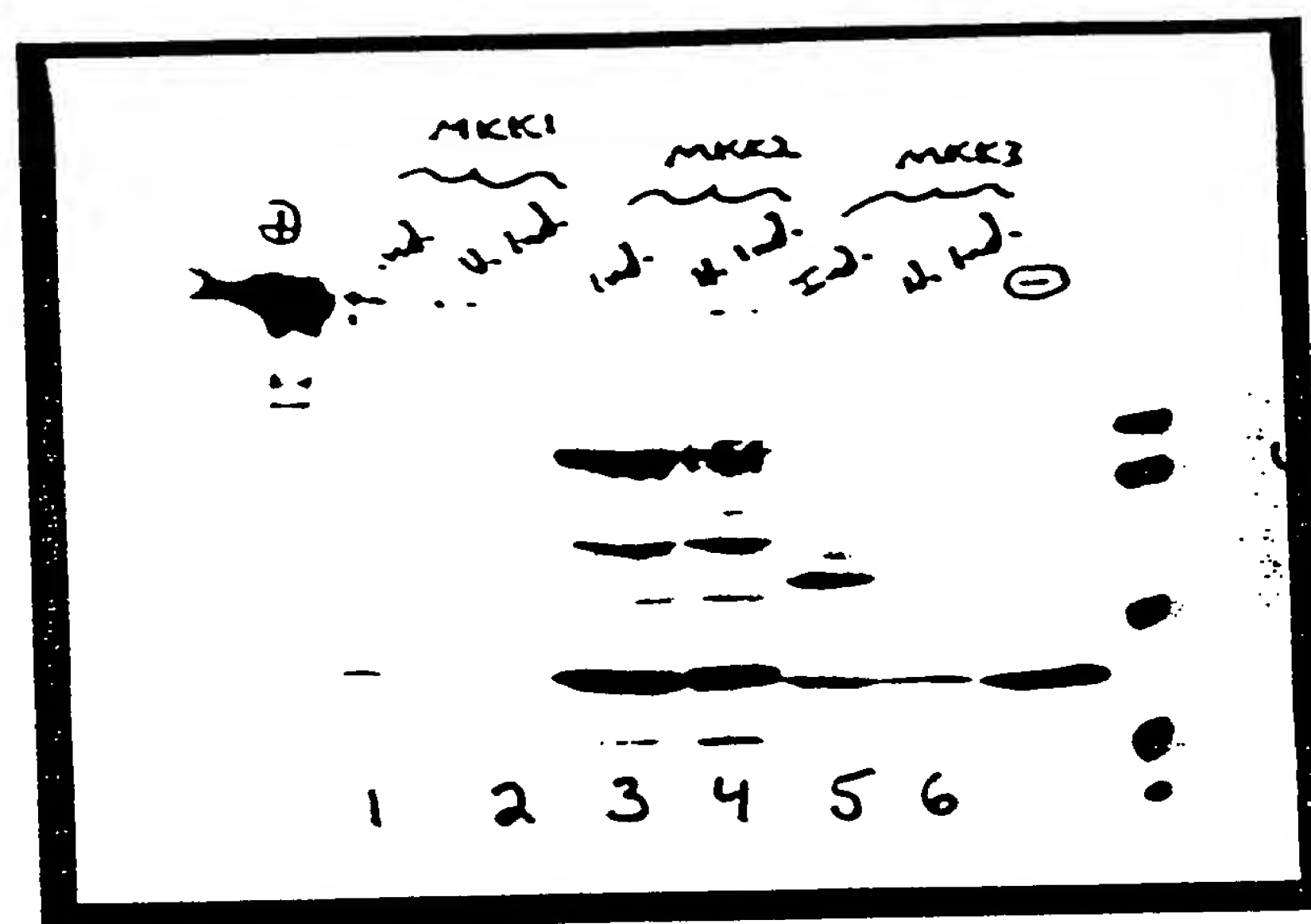


FIGURE 7

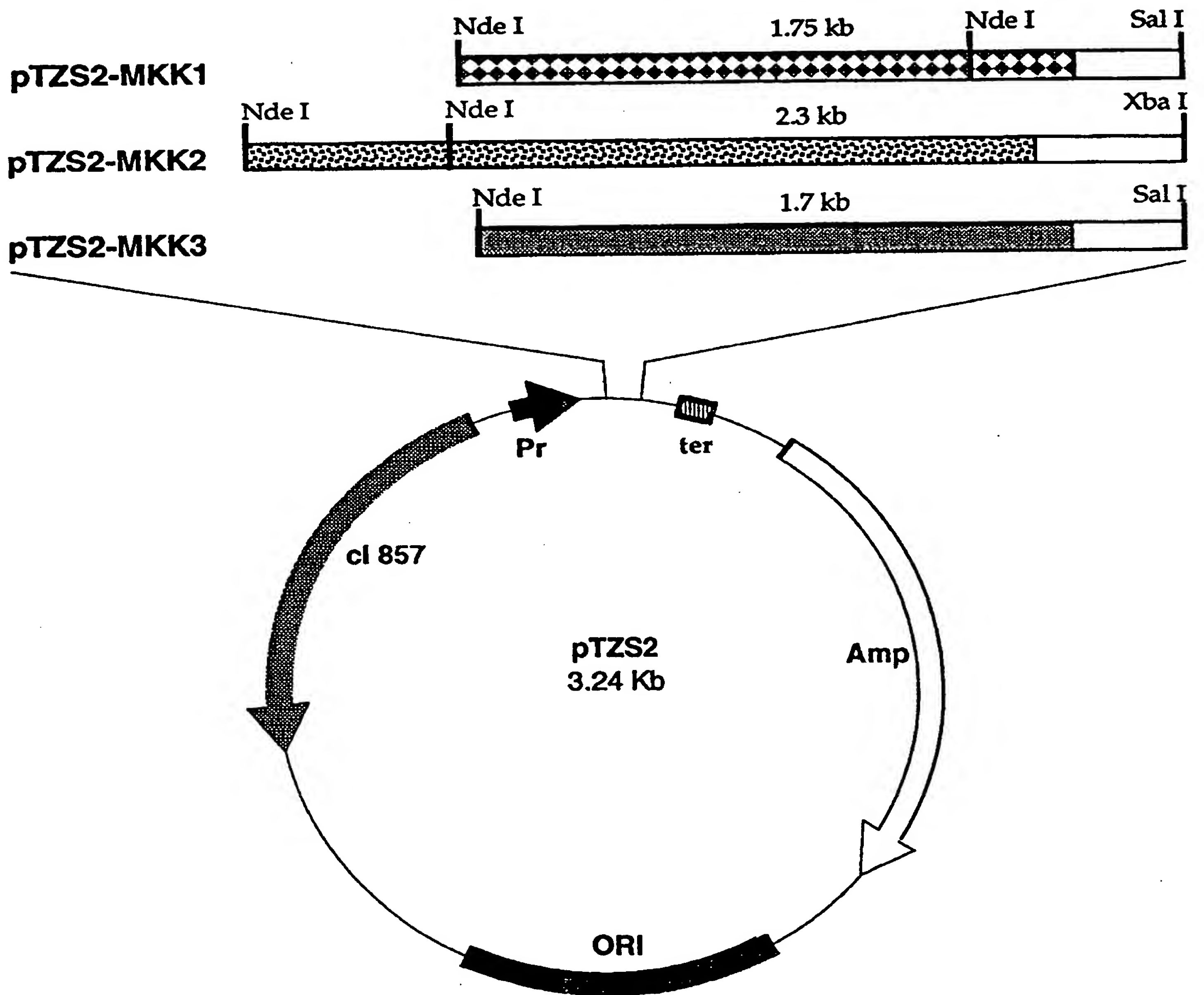


FIGURE 8

1	M A G R G S L V S W R A F H G C D S A E E L P R V S P R F L	MKK1 aa
1	M S A I Q A A - - - - -	hCSK (JH0559)
31	R A W H P P P V S A R M P T R R W A P G T Q C I T K C E H T	MKK1 aa
8	- - - - - W P S G T E C I A K Y N F H	hCSK (JH0559)
61	R P K P G E L A F R K G D V V T I L E A C E N K S W Y R V K	MKK1 aa
22	G T A E Q D L P F C K G D V L T I V A V T K D P N W Y K A K	hCSK (JH0559)
91	H H T S G O E G L L A A G A L R E R E A L S A D P K L S L M	MKK1 aa
52	N K V - G R E G I I P A N Y V Q K R E G V K A G T K L S L M	hCSK (JH0559)
121	P W F H G K I S G O E A V O O L O P P E D G L F L V R E S A	MKK1 aa
81	P W F H G K I T R E Q A E R L L Y P P E T G L F L V R E S T	hCSK (JH0559)
151	R H P G D Y V L C V S F G R D V I H Y R V L H R D G H L T I	MKK1 aa
111	N Y P G D Y T L C V S C D G K V E H Y R I M Y H A S K L S I	hCSK (JH0559)
181	D E A V F F C N L M D M V E H Y S K D K G A I C T K L V R P	MKK1 aa
141	D E E V Y F E N L M Q L V E H Y T S D A D G L C T R L I K P	hCSK (JH0559)
211	K R K H G T K S A E E E L A R A G W L L N L O H L T L G A O	MKK1 aa
171	K V M E G T V A A Q D E F Y R S G W A L N M K E L K L L Q T	hCSK (JH0559)
241	I G E G E F G A V L O G E Y L G O K V A V K N I K C D V T A	MKK1 aa
201	I G K G E F G D V M L G D Y R G N K V A V K C I K N D A T A	hCSK (JH0559)
271	Q A F L D E T A V M T K M O H E N L V R L L G V I L H O - -	MKK1 aa
231	Q A F L A E A S V M T Q L R H S N L V Q L L G V I V E E K G	hCSK (JH0559)
299	G L Y I V M E H V S K G N L V N F L R T R G R A L V N T A O	MKK1 aa
261	G L Y I V T E Y M A K G S L V D Y L R S R G R S V L G G D C	hCSK (JH0559)
329	L L O F S L H V A E G M E Y L E S K K L V H R D L A A R N I	MKK1 aa
291	L L K F S L D V C E A M E Y L E G N N F V H R D L A A R N V	hCSK (JH0559)
359	L V S E D L V A K V S D F G L A K A E R K G L D S S R L P V	MKK1 aa
321	L V S E D N V A K V S D F G L T K E A S S T Q D T G K L P V	hCSK (JH0559)
389	K W T A P E A L K H G K F T S K S D V W S F G V L L W E V F	MKK1 aa
351	K W T A P E A L R E K K F S T K S D V W S F G I L L W E I Y	hCSK (JH0559)
419	S Y G R A P Y P K M S L K E V S E A V E K G Y R M E P P E G	MKK1 aa
381	S F G R V P Y P R I P L K D V V P R V E K G Y K M D A P D G	hCSK (JH0559)
449	C P G P V H V L M S S C W E A E P A R R P P F R K L A E K L	MKK1 aa
411	C P P A V Y E V M K N C W H L D A A M R P S F L Q L R E Q L	hCSK (JH0559)
479	A R E L R S A G A P A S V S G O D A D G S T S P R S O E P	MKK1 aa
441	E H - - - - - I K T H E L H - - - - - L	hCSK (JH0559)

FIGURE 9

1	M	D	T	K	S	I	L	E	E	L	L	L	K	R	S	Q	Q	K	K	K	M	S	P	N	N	Y	K	E	R	L	MKK2	aa						
1	M	A	A	-	V	I	L	E	S	I	F	L	K	R	S	Q	Q	K	K	K	T	S	P	L	N	F	K	K	R	L	hAtk	(X58957)						
1	M	N	N	F	I	L	L	E	E	Q	L	I	K	K	S	O	O	K	R	R	T	S	P	S	N	F	K	V	R	F	hTKT	(L10717)						
1	M	M	V	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	mTec	(X5663)						
31	F	V	L	T	K	T	N	L	S	Y	Y	E	-	-	Y	D	K	M	K	R	G	S	R	K	G	S	I	E	I	K	MKK2	aa						
30	F	L	L	T	V	H	K	L	S	Y	Y	E	Y	D	F	E	R	G	R	G	S	K	K	G	S	I	D	V	E	hAtk	(X58957)							
31	F	V	L	T	K	A	S	L	A	Y	F	E	D	R	-	-	H	G	K	K	R	T	L	K	G	S	I	E	L	S	hTKT	(L10717)						
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	mTec	(X5663)						
59	K	I	R	C	V	E	K	V	N	L	E	E	Q	T	P	V	E	R	Q	-	-	-	-	-	-	-	-	-	-	-	-	MKK2	aa					
60	K	I	T	C	V	E	T	V	V	P	E	K	N	P	P	P	E	R	O	I	P	R	G	E	E	S	S	E	M	hAtk	(X58957)							
59	R	I	K	C	V	E	I	V	K	S	D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	hTKT	(L10717)						
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	mTec	(X5663)						
78	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	MKK2	aa					
90	E	Q	I	S	I	I	E	R	F	P	Y	P	F	Q	V	V	Y	D	E	G	P	L	Y	V	F	S	P	T	E	E	hAtk	(X58957)						
70	-	-	I	S	I	P	C	H	Y	K	Y	P	F	Q	V	V	H	D	N	Y	L	L	Y	V	F	A	P	D	R	E	hTKT	(L10717)						
4	-	-	-	-	-	-	-	-	-	-	S	F	P	V	K	I	N	F	H	S	S	P	-	-	-	-	-	-	-	-	Q	mTec	(X5663)					
98	S	R	S	Q	W	L	K	A	L	Q	K	E	I	R	G	N	P	H	L	L	V	K	Y	H	S	G	F	F	V	D	MKK2	aa						
120	L	R	K	R	W	I	H	Q	L	K	N	V	I	R	Y	N	S	D	L	V	Q	K	Y	H	P	C	F	W	I	D	hAtk	(X58957)						
98	S	R	Q	R	W	V	L	A	L	K	E	E	T	R	N	N	N	S	L	V	P	K	Y	H	P	N	F	W	M	D	hTKT	(L10717)						
17	S	R	D	R	W	V	K	K	L	K	E	E	I	K	N	N	N	N	I	M	I	K	Y	H	P	K	F	W	A	D	mTec	(X5663)						
128	G	K	F	L	C	C	Q	Q	S	C	K	A	A	P	G	C	T	L	W	E	A	Y	A	N	L	H	T	A	V	N	MKK2	aa						
150	G	Q	Y	L	C	C	S	Q	T	A	K	N	A	M	G	C	Q	I	L	E	N	R	N	G	S	L	K	P	G	S	hAtk	(X58957)						
128	G	K	W	R	C	C	S	Q	L	E	K	L	A	T	G	C	A	Q	Y	D	-	-	-	-	-	-	-	-	-	P	hTKT	(L10717)						
47	G	S	Y	Q	C	C	R	O	T	E	K	L	A	P	G	C	E	K	Y	N	L	F	E	S	S	I	-	-	-	-	mTec	(X5663)						
158	E	E	K	H	R	V	P	T	F	P	D	R	V	L	K	I	P	R	A	V	P	V	L	K	M	D	A	P	S	S	MKK2	aa						
180	S	H	R	K	T	K	K	P	L	P	P	-	-	-	-	T	P	E	E	D	Q	I	L	K	K	P	L	P	P	E	hAtk	(X58957)						
149	T	K	N	A	S	K	K	P	L	P	P	-	-	-	-	T	P	E	D	N	R	-	-	-	-	-	-	-	-	hTKT	(L10717)							
73	-	-	-	-	-	R	K	T	L	P	P	-	-	-	-	A	P	E	-	-	-	-	I	K	K	R	R	P	P	-	mTec	(X5663)						
188	S	T	T	L	A	Q	Y	D	N	E	S	K	K	N	Y	G	S	Q	P	P	S	S	S	T	S	L	A	Q	Y	D	MKK2	aa						
206	P	A	A	A	P	V	S	T	S	E	L	K	K	-	-	-	-	-	-	-	-	-	-	V	V	A	L	Y	D	hAtk	(X58957)							
166	-	-	-	R	P	L	W	E	P	E	E	T	V	-	-	-	-	-	-	-	-	-	-	V	I	A	L	Y	D	hTKT	(L10717)							
89	P	P	I	P	P	E	E	E	N	T	E	E	I	-	-	-	-	-	-	-	-	-	-	V	V	A	M	Y	D	mTec	(X5663)							
218	S	N	S	K	K	I	Y	G	S	Q	P	N	F	N	M	Q	Y	I	P	R	E	D	F	P	-	D	W	W	Q	V	MKK2	aa						
225	Y	M	P	M	N	A	N	D	L	Q	L	R	K	G	D	E	Y	F	I	L	E	E	S	N	L	P	W	W	R	A	hAtk	(X58957)						
182	Y	Q	T	N	D	P	Q	E	L	A	L	R	R	N	E	E	Y	C	L	L	D	S	S	E	I	H	W	W	R	V	hTKT	(L10717)						
108	F	O	A	T	E	A	H	D	L	R	L	E	R	G	Q	E	Y	I	L	L	E	K	N	D	L	H	W	W	R	A	mTec	(X5663)						
247	R	K	L	K	S	S	S	S	S	E	D	V	A	S	S	N	Q	K	E	R	N	V	N	H	T	T	S	K	I	S	MKK2	aa						
255	R	D	-	-	K	N	G	Q	E	G	Y	I	P	S	N	Y	V	T	E	-	A	-	-	-	-	-	-	-	-	-	hAtk	(X58957)						
212	Q	D	-	-	R	N	G	H	E	G	Y	V	P	S	S	Y	L	V	E	K	S	-	-	-	-	-	-	-	-	-	hTKT	(L10717)						
138	R	D	-	-	K	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	mTec	(X5663)						
277	W	E	F	P	E	S	S	S	S	E	E	E	E	N	L	D	D	Y	D	W	F	A	G	N	I	S	R	S	Q	S	MKK2	aa						
273	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	E	D	S	I	E	M	Y	E	W	Y	S	K	H	M	T	R	S	O	A	hAtk	(X58957)
231	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P	N	N	L	E	T	Y	E	W	Y	N	K	S	I	S	R	D	K	A	hTKT	(L10717)
141	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Y	G	W	Y	C	R	N	T	N	R	S	K	A	mTec	(X5663)
307	E	Q	L	L	R	Q	K	G	K	E	G	A	F	M	V	R	N	S	S	O	V	G	M	Y	T	V	S	L	F	S	MKK2	aa						
292	E	Q	L	L	K	Q	E	G	K	E	G	G	F	I	V	R	D	S	S	K	A	G	K	Y	T	V	S	V	F	A	hAtk	(X58957)						
250	E	K	L	L	L	D	T	G	K	E	G	A	F	M	V	R	D	S	R	T	A	G	T	Y	T	V	S	V	F	T	hTKT	(L10717)						
154	E	Q	L	L	R	T	E	D	K	E	G	G	F	M	V	R	D	S	S	O	P	G	L	Y	T	V	S	L	Y	T	mTec	(X5663)						

FIGURE 10A



337 K - A V N D K K G T V K H Y H V H - - T N A E N K L Y L A E MKK2 aa  
 322 K S T - G D P Q G V I R H Y V V - - C S T P Q S Q Y Y L A E hAtk (X58957)  
 280 K A V V S E N N P C I K H Y H I K E T N D N P K R Y Y V A E hTKT (L10717)  
 184 K F G - G E G S S G F R H Y H I K E T A T S P K K Y Y L A E mTec (X5663)

364 N Y C F D S I P K L I H Y H Q H N S A G M I T R L R H P V S MKK2 aa  
 349 K H L F S T I P E L I N Y H Q H N S A G L I S R L K Y P V S hAtk (X58957)  
 310 K Y V F D S I P L L I N Y H Q H N G G L V T R L R Y P V C hTKT (L10717)  
 213 K H A F G S I P E I I E Y H K H N A A G L V T R L R Y P V S mTec (X5663)

394 T K A N K V P D S V S L G N G I W E L K R E E I T L L K E L MKK2 aa  
 379 Q Q N K N A P S T A G L G Y G S W E I D P K D L T F L K E L hAtk (X58957)  
 340 F G R Q K A P V T A G L R Y G K W V I D P S E L T F V Q E I hTKT (L10717)  
 243 T K G K N A P T T A G F S Y D K W E I N P S E L T F M R E L mTec (X5663)

424 G S G Q F G V V Q L G K W K G Q Y D V A V K M I K E G S M S MKK2 aa  
 409 G T G Q F G V V K Y G K W R G O Y D V A I K M I K E G S M S hAtk (X58957)  
 370 G S G Q F G L V H L G Y W L N K D K V A I K T I R E G A M S hTKT (L10717)  
 273 G S G L F G V V R L G K W R A Q Y K V A I K A I R E G A M C mTec (X5663)

454 E D E F F Q E A Q T M M K L S H P K L V K F Y G V C S K E Y MKK2 aa  
 439 E D E F I E E A K V M M N L S H E K L V Q L Y G V C T K Q R hAtk (X58957)  
 400 E E D F I E E A E V M M K L S H P K L V Q L Y G V C L E Q A hTKT (L10717)  
 303 E E D F I E E A K V M M K L T H P K L V Q L Y G V C T Q O K mTec (X5663)

484 P I Y I V T E Y I S N G C L L N Y L R S H G K G L E P S Q L MKK2 aa  
 469 P I F I I T E Y M A N G C L L N Y L R E M R H R F Q T Q O L hAtk (X58957)  
 430 P I C L V F E F M E H G C L S D Y L R T Q R G L F A A E T L hTKT (L10717)  
 333 P I Y I V T E F M E R G C L L N F L R Q R Q G H F S R D M L mTec (X5663)

514 L E M C Y D V C E G M A F L E S H Q F I H R D L A A R N C L MKK2 aa  
 499 L E M C K D V C E A M E Y L E S K Q F L H R D L A A R N C L hAtk (X58957)  
 460 L G M C L D V C E G M A Y L E E A C V I H R D L A A R N C L hTKT (L10717)  
 363 L S M C Q D V C E G M E Y L E R N S F I H R D L A A R N C L mTec (X5663)

544 V D R D L C V K V S D F G M T R Y V L D D Q Y V S S V G T K MKK2 aa  
 529 V N D Q G V V K V S D F G L S R Y V L D D E Y T S S V G S K hAtk (X58957)  
 490 V G E N Q V I K V S D F G M T R F V L D D Q Y T S S T G T K hTKT (L10717)  
 393 V N E A G V V K V S D F G M A R Y V L D D Q Y T S S S G A K mTec (X5663)

574 F P V K W S A P E V F H Y F K Y S S K S D V W A F G I L M W MKK2 aa  
 559 F P V R W S P P E V L M Y S K F S S K S D I W A F G V L M W hAtk (X58957)  
 520 F P V K W A S P E V F S F S R Y S S K S D V W S F G V L M W hTKT (L10717)  
 423 F P V K W C P P E V F N Y S R F S S K S D V W S F G V L M W mTec (X5663)

604 E V F S L G K Q P Y D L Y D N S Q V V L K V S Q G H R L Y R MKK2 aa  
 589 E I Y S L G K M P Y E R F T N S E T A E H I A O G L R L Y R hAtk (X58957)  
 550 E V F S E G K I P Y E N R S N S E V V E D I S T G F R L Y K hTKT (L10717)  
 453 E I F T E G R M P F E K N T N Y E V V T M V T R G H R L H R mTec (X5663)

634 P H L A S D T I Y O I M Y S C W H E L P E K R P T F Q Q L L MKK2 aa  
 619 P H L A S E K V Y T I M Y S C W H E K A D E R P T F K I L L hAtk (X58957)  
 580 P R L A S T H V Y O I M N H C W K E R P E D R P A F S R L L hTKT (L10717)  
 483 P K L A T K Y L Y E V M L R C W Q E R P E G R P S F E D L L mTec (X5663)

664 S S I E P L R E K D K H MKK2 aa  
 649 S N I L D V M D E E S hAtk (X58957)  
 610 R Q L A E I A E S - - - G L hTKT (L10717)  
 513 R T I D E L V E C E E T F G R mTec (X5663)

FIGURE 10B

MKK3 MPI aa

FIGURE 11A



99	Y	I	P	S	N	Y	V	A	E	D	R	S	L	Q	A	E	P	W	F	F	G	A	I	G	R	S	D	A	E	K	MKK3 MPI aa
132	Y	I	P	S	N	Y	V	A	P	V	D	S	I	Q	A	E	E	W	Y	F	G	K	L	G	R	K	D	A	E	R	hFyn
131	Y	I	P	S	N	Y	V	A	P	V	D	S	I	Q	A	E	E	W	Y	F	G	K	I	G	R	K	D	A	E	R	cYrk
134	Y	I	P	S	N	Y	V	A	P	S	D	S	I	Q	A	E	E	W	Y	F	G	K	I	T	R	R	E	S	E	R	hSrc
141	Y	I	P	S	N	Y	V	A	P	A	D	S	I	Q	A	E	E	W	Y	F	G	K	M	G	R	K	D	A	E	R	hYes
127	C	I	P	S	N	Y	V	A	P	V	D	S	I	Q	A	E	E	W	Y	F	G	K	I	G	R	K	D	A	E	R	hFgr
112	F	I	P	S	N	Y	V	A	K	L	N	T	L	E	T	E	E	W	F	F	K	D	I	T	R	K	D	A	E	R	hLyn
106	Y	I	P	S	N	Y	V	A	R	V	D	S	L	E	T	E	E	W	F	F	K	G	I	S	R	K	D	A	E	R	hHck
110	F	I	P	F	N	F	V	A	K	A	N	S	L	E	P	E	P	W	F	F	K	N	L	S	R	K	D	A	E	R	hLck
101	Y	V	P	S	N	F	V	A	P	V	E	T	L	E	V	E	K	W	F	F	R	T	I	S	R	K	D	A	E	R	mBlk
129	Q	L	L	Y	S	E	N	K	T	G	S	F	L	I	R	E	S	E	S	Q	K	G	E	F	S	L	S	V	L	D	MKK3 MPI aa
162	Q	L	L	S	F	G	N	P	R	G	T	F	L	I	R	E	S	E	T	T	K	G	A	Y	S	L	S	I	R	D	hFyn
161	Q	L	L	C	H	G	N	C	R	G	T	F	L	I	R	E	S	E	T	T	K	G	A	Y	S	L	S	I	R	D	cYrk
164	L	L	L	N	A	E	N	P	R	G	T	F	L	V	R	E	S	E	T	T	K	G	A	Y	C	L	S	V	S	D	hSrc
171	L	L	L	N	P	G	N	Q	R	G	I	F	L	V	R	E	S	E	T	T	K	G	A	Y	S	L	S	I	R	D	hYes
157	Q	L	L	S	P	G	N	P	Q	G	A	F	L	I	R	E	S	E	T	T	K	G	A	Y	S	L	S	I	R	D	hFgr
142	Q	L	L	A	P	G	N	S	A	G	A	F	L	I	R	E	S	E	T	L	K	G	S	F	S	L	S	V	R	D	hLyn
136	Q	L	L	A	P	G	N	M	L	G	S	F	M	I	R	D	S	E	T	T	K	G	S	Y	S	L	S	V	R	D	hHck
140	Q	L	L	A	P	G	N	T	H	G	S	F	L	I	R	E	S	E	S	T	A	G	S	F	S	L	S	V	R	D	hLck
131	Q	L	L	A	P	M	N	K	A	G	S	F	L	I	R	E	S	E	S	N	K	G	A	F	S	L	S	V	K	D	mBlk
159	-	-	-	-	-	G	A	V	V	K	H	Y	R	I	K	R	L	D	E	G	G	F	F	L	T	R	R	I	F	MKK3 MPI aa	
192	W	D	D	M	K	G	D	H	V	K	H	Y	K	I	R	K	L	D	N	G	G	Y	Y	I	T	T	R	A	Q	F	hFyn
191	W	D	E	A	K	G	D	H	V	K	H	Y	K	I	R	K	L	D	S	G	G	Y	Y	I	T	T	R	A	Q	F	cYrk
194	F	D	N	A	K	G	L	N	V	K	H	Y	K	I	R	K	L	D	S	G	G	F	Y	I	T	S	R	T	Q	F	hSrc
201	W	D	E	I	R	G	D	N	V	K	H	Y	K	I	R	K	L	D	N	G	G	Y	Y	I	T	T	R	A	Q	F	hYes
187	W	D	Q	T	R	G	D	H	V	K	H	Y	K	I	R	K	L	D	M	G	G	Y	Y	I	T	T	R	V	Q	F	hFgr
172	F	D	P	V	H	G	D	V	I	K	H	Y	K	I	R	S	L	D	N	G	G	Y	Y	I	S	P	R	I	T	F	hLyn
166	Y	D	P	R	Q	G	D	T	V	K	H	Y	K	I	R	T	L	D	N	G	G	F	Y	I	S	P	R	S	T	F	hHck
170	F	D	Q	N	Q	G	E	V	V	K	H	Y	K	I	R	N	L	D	N	G	G	F	Y	I	S	P	R	I	T	F	hLck
161	I	T	T	-	Q	G	E	V	V	K	H	Y	K	I	R	S	L	D	N	G	G	Y	Y	I	S	P	R	I	T	F	mBlk
184	S	T	L	N	E	F	V	S	H	Y	T	K	T	S	D	G	L	C	V	K	L	G	K	P	C	L	K	I	Q	V	MKK3 MPI aa
222	E	T	L	Q	Q	L	V	Q	H	Y	S	E	R	A	A	G	L	C	C	R	L	V	V	P	C	H	K	G	M	-	hFyn
221	D	T	I	Q	Q	L	V	Q	H	Y	I	E	R	A	A	G	L	C	C	R	L	A	V	P	C	P	K	G	T	-	cYrk
224	N	S	L	Q	Q	L	V	A	Y	Y	S	K	H	A	D	G	L	C	H	R	L	T	T	V	C	P	T	S	K	-	hSrc
231	D	T	L	Q	K	L	V	K	H	Y	T	E	H	A	D	G	L	C	H	K	L	T	T	V	C	P	T	V	K	-	hYes
217	N	S	V	Q	E	L	V	Q	H	Y	M	E	V	N	D	G	L	C	N	L	L	I	A	P	C	T	I	M	K	-	hFgr
202	P	C	I	S	D	M	I	K	H	Y	Q	K	Q	A	D	G	L	C	R	R	L	E	K	A	C	I	S	P	K	-	hLyn
196	S	T	L	Q	E	L	V	D	H	Y	K	K	G	N	D	G	L	C	Q	K	L	S	V	P	C	M	S	S	K	-	hHck
200	P	G	L	H	E	L	V	R	H	Y	T	N	A	S	D	G	L	C	T	R	L	S	R	P	C	Q	T	Q	K	-	hLck
190	P	T	L	Q	A	L	V	Q	H	Y	S	K	K	G	D	G	L	C	Q	K	L	T	L	P	C	V	N	L	A	-	mBlk
214	P	A	P	F	D	L	S	Y	K	T	V	D	Q	W	E	I	D	R	N	S	I	Q	L	L	K	R	L	G	S	G	MKK3 MPI aa
251	P	R	L	T	D	L	S	V	K	T	K	D	V	W	E	I	P	R	E	S	L	Q	L	I	K	R	L	G	N	G	hFyn
250	P	K	L	A	D	L	S	V	K	T	K	D	V	W	E	I	P	R	E	S	L	Q	L	L	Q	K	L	G	N	G	cYrk
253	P	Q	T	Q	G	L	A	-	-	-	K	D	A	W	E	I	P	R	E	S	L	R	L	E	V	K	L	G	Q	G	hSrc
260	P	Q	T	Q	G	L	A	-	-	-	K	D	A	W	E	I	P	R	E	S	L	R	L	E	V	K	L	G	Q	G	hYes
246	P	Q	T	L	G	L	A	-	-	-	K	D	A	W	E	I	S	R	S	S	I	T	L	E	R	R	L	G	T	G	hFgr
231	P	Q	-	-	-	-	K	P	W	D	K	D	A	W	E	I	P	R	E	S	I	K	L	V	K	R	L	G	A	G	hLyn
225	P	Q	-	-	-	-	K	P	W	E	K	D	A	W	E	I	P	R	E	S	L	K	L	E	K	K	L	G	A	G	hHck
229	P	Q	-	-	-	-	K	P	W	W	E	D	E	W	E	V	P	R	E	T	L	K	L	V	E	R	L	G	A	G	hLck
219	P	K	-	-	-	-	N	L	W	A	Q	D	E	W	E	I	P	R	Q	S	L	K	L	V	R	K	L	G	S	G	mBlk

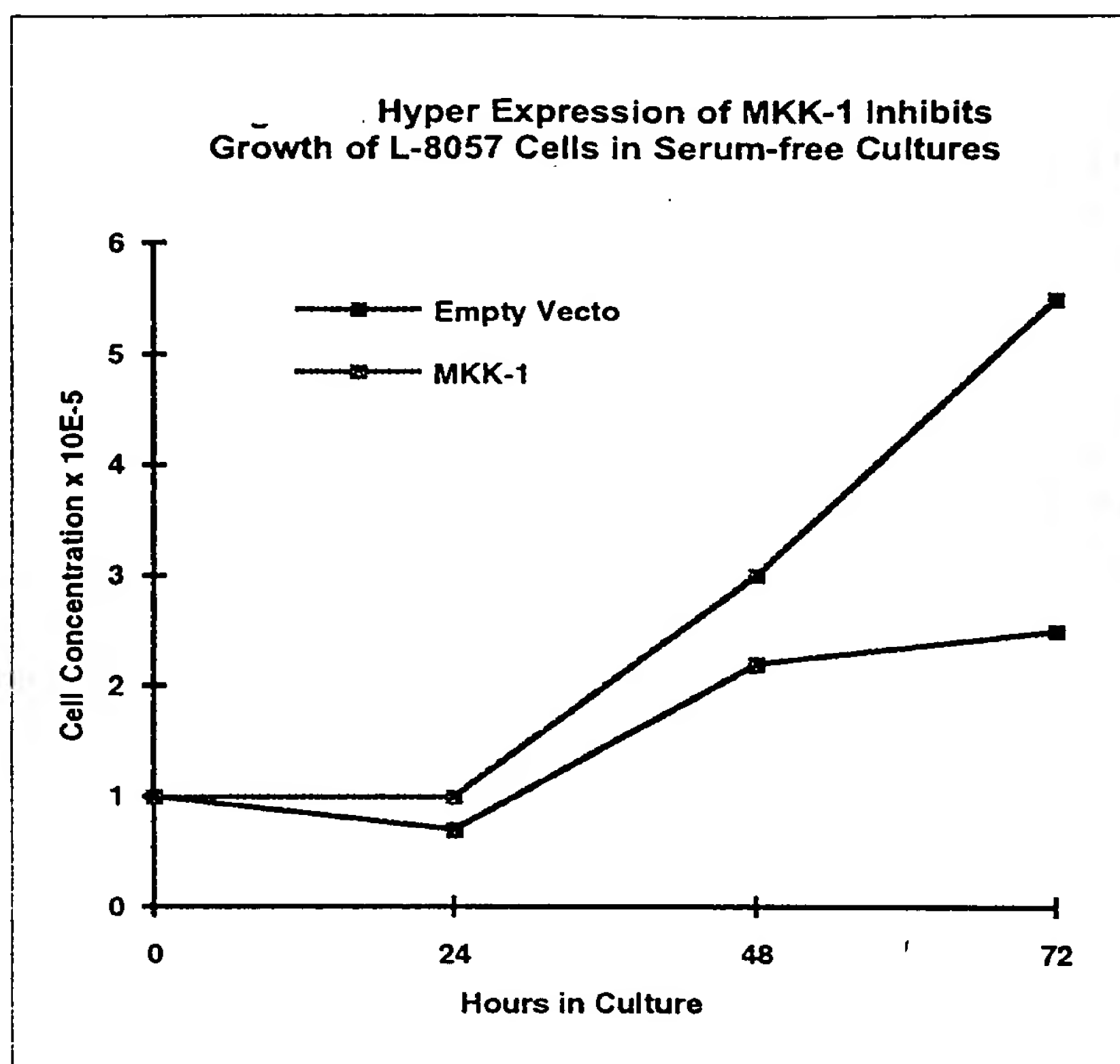
FIGURE 11B

244	Q	F	G	E	V	W	E	G	L	W	N	N	T	T	P	V	A	V	K	T	L	K	P	G	S	M	D	P	N	D	MKK3 MPI aa
281	Q	F	G	E	V	W	M	G	T	W	N	G	N	T	K	V	A	I	K	T	L	K	P	G	T	M	S	P	E	S	hFyn
280	Q	F	G	E	V	W	M	G	T	W	N	G	T	T	K	V	A	V	K	T	L	K	P	G	T	M	S	P	E	A	cYrk
280	C	F	G	E	V	W	M	G	T	W	N	G	T	T	R	V	A	I	K	T	L	K	P	G	T	M	S	P	E	A	hSrc
287	C	F	G	E	V	W	M	G	T	W	N	G	T	T	K	V	A	I	K	T	L	K	P	G	T	M	M	P	E	A	hYes
273	C	F	G	D	V	W	L	G	T	W	N	G	S	T	K	V	A	V	K	T	L	K	P	G	T	M	S	P	K	A	hFgr
257	Q	F	G	E	V	W	M	G	Y	Y	N	N	S	T	K	V	A	V	K	T	L	K	P	G	T	M	S	V	Q	A	hLyn
251	Q	F	G	E	V	W	M	A	T	Y	N	K	H	T	K	V	A	V	K	T	M	K	P	G	S	M	S	V	E	A	hHck
255	Q	F	G	E	V	W	M	G	Y	Y	N	G	H	T	K	V	A	V	K	S	L	K	Q	G	S	M	S	P	D	A	hLck
245	Q	F	G	E	V	W	M	G	Y	Y	K	N	N	M	K	V	A	I	K	T	L	K	E	G	T	M	S	P	E	A	mBlk
274	F	L	R	E	A	Q	I	M	K	N	L	R	H	P	K	L	I	Q	L	Y	A	V	C	T	L	E	D	P	I	Y	MKK3 MPI aa
311	F	L	E	E	A	Q	I	M	K	K	L	K	H	D	K	L	V	Q	L	Y	A	V	V	S	-	E	E	P	I	Y	hFyn
310	F	L	E	E	A	Q	I	M	K	R	L	R	H	D	K	L	V	Q	L	Y	A	V	V	S	-	E	E	P	I	Y	cYrk
310	F	L	Q	E	A	Q	V	M	K	K	L	R	H	E	K	L	V	Q	L	Y	A	V	V	S	-	E	E	P	I	Y	hSrc
317	F	L	Q	E	A	Q	I	M	K	K	L	R	H	D	K	L	V	P	L	Y	A	V	V	S	-	E	E	P	I	Y	hYes
303	F	L	E	E	A	Q	V	M	K	L	L	R	H	D	K	L	V	Q	L	Y	A	V	V	S	-	E	E	P	I	Y	hFgr
287	F	L	E	E	A	N	L	M	K	T	L	Q	H	D	K	L	V	R	L	Y	A	V	V	T	R	E	E	P	I	Y	hLyn
281	F	L	A	E	A	N	V	M	K	T	L	Q	H	D	K	L	V	K	L	H	A	V	V	T	K	E	-	P	I	Y	hHck
285	F	L	A	E	A	N	L	M	K	Q	L	Q	H	Q	R	L	V	R	L	Y	A	V	V	T	-	Q	E	P	I	Y	hLck
275	F	L	G	E	A	N	V	M	K	T	L	Q	H	E	R	L	V	R	L	Y	A	V	V	T	R	E	-	P	I	Y	mBlk
304	I	I	T	E	L	M	R	H	G	S	L	Q	E	Y	L	Q	N	D	T	G	S	K	I	H	L	T	Q	Q	V	D	MKK3 MPI aa
340	I	V	T	E	Y	M	N	K	G	S	L	L	D	F	L	K	D	G	E	G	R	A	L	K	L	P	N	L	V	D	hFyn
339	I	V	T	E	F	M	S	Q	G	S	L	L	D	F	L	K	D	G	D	G	R	Y	L	K	L	P	Q	L	V	D	cYrk
339	I	V	T	E	Y	M	S	K	G	S	L	L	D	F	L	K	G	E	T	G	K	Y	L	R	L	P	Q	L	V	D	hSrc
346	I	V	T	E	F	M	S	K	G	S	L	L	D	F	L	K	E	G	D	G	K	Y	L	K	L	P	Q	L	V	D	hYes
332	I	V	T	E	F	M	C	H	G	S	L	L	D	F	L	K	N	P	E	G	Q	D	L	R	L	P	Q	L	V	D	hFgr
317	I	I	T	E	Y	M	A	K	G	S	L	L	D	F	L	K	S	D	E	G	G	K	V	L	L	P	K	L	I	D	hLyn
310	I	I	T	E	F	M	A	K	G	S	L	L	D	F	L	K	S	D	E	G	S	K	Q	P	L	P	K	L	I	D	hHck
314	I	I	T	E	Y	M	E	N	G	S	L	V	D	F	L	K	T	P	S	G	I	K	L	T	I	N	K	L	L	D	hLck
304	I	V	T	E	Y	M	A	R	G	C	L	L	D	F	L	K	T	D	E	G	S	R	L	S	L	P	R	L	I	D	mBlk
334	M	A	A	Q	V	A	S	G	M	A	Y	L	E	S	R	N	Y	I	H	R	D	L	A	A	R	N	V	L	V	G	MKK3 MPI aa
370	M	A	A	Q	V	A	A	G	M	A	Y	I	E	R	M	N	Y	I	H	R	D	L	R	S	A	N	I	L	V	G	hFyn
369	M	A	A	Q	I	A	A	G	M	A	Y	I	E	R	M	N	Y	I	H	R	D	L	R	A	A	N	I	L	V	G	cYrk
369	M	A	A	Q	I	A	S	G	M	A	Y	V	E	R	M	N	Y	V	H	R	D	L	R	A	A	N	I	L	V	G	hSrc
376	M	A	A	Q	I	A	D	G	M	A	Y	I	E	R	M	N	Y	I	H	R	D	L	R	A	A	N	I	L	V	G	hYes
362	M	A	A	Q	V	A	E	G	M	A	Y	M	E	R	M	N	Y	I	H	R	D	L	R	A	A	N	I	L	V	G	hFgr
347	F	S	A	Q	I	A	E	G	M	A	Y	I	E	R	K	N	Y	I	H	R	D	L	R	A	A	N	V	L	V	S	hLyn
340	F	S	A	Q	I	A	E	G	M	A	F	I	E	Q	R	N	Y	I	H	R	D	L	R	A	A	N	I	L	V	S	hHck
344	M	A	A	Q	I	A	E	G	M	A	F	I	E	E	R	N	Y	I	H	R	D	L	R	A	A	N	I	L	V	S	hLck
334	M	S	A	Q	V	A	E	G	M	A	Y	I	E	R	M	N	S	I	H	R	D	L	R	A	A	N	I	L	V	S	mBlk
364	E	H	N	I	Y	K	V	A	D	F	G	L	A	R	V	F	K	V	D	N	E	D	I	Y	E	S	R	H	E	I	MKK3 MPI aa
400	N	G	L	I	C	K	I	A	D	F	G	L	A	R	L	I	-	-	-	E	D	N	E	Y	T	A	R	Q	G	A	hFyn
399	D	N	L	V	C	K	I	A	D	F	G	L	A	R	L	I	-	-	-	E	D	N	E	Y	T	A	R	Q	G	A	cYrk
399	E	N	L	V	C	K	V	A	D	F	G	L	A	R	L	I	-	-	-	E	D	N	E	Y	T	A	R	Q	G	A	hSrc
406	E	N	L	V	C	K	I	A	D	F	G	L	A	R	L	I	-	-	-	E	D	N	E	Y	T	A	R	Q	G	A	hYes
392	E	R	L	A	C	K	I	A	D	F	G	L	A	R	L	I	-	-	-	K	D	D	E	Y	N	P	C	O	G	S	hFgr
377	E	S	L	M	C	K	I	A	D	F	G	L	A	R	V	I	-	-	-	E	D	N	E	Y	T	A	R	E	G	A	hLyn
370	A	S	L	V	C	K	I	A	D	F	G	L	A	R	V	I	-	-	-	E	D	N	E	Y	T	A	R	E	G	A	hHck
374	D	T	L	S	C	K	I	A	D	F	G	L	A	R	L	I	-	-	-	E	D	N	E	Y	T	A	R	E	G	A	hLck
364	E	T	L	C	C	K	I	A	D	F	G	L	A	R	I	I	-	-	-	D	S	E	Y	T	A	Q	E	G	A	mBlk	

FIGURE 11C

394	K	L	P	V	K	W	T	A	P	E	A	I	R	S	N	K	F	S	I	K	S	D	V	W	S	F	G	I	L	L	MKK3 MPI aa	
427	K	F	P	I	K	W	T	A	P	E	A	A	L	Y	G	R	F	T	I	K	S	D	V	W	S	F	G	I	L	L	hFyn	
426	K	F	P	I	K	W	T	A	P	E	A	A	L	F	G	K	F	T	I	K	S	D	V	W	S	F	G	I	L	L	cYrk	
426	K	F	P	I	K	W	T	A	P	E	A	A	L	Y	G	R	F	T	I	K	S	D	V	W	S	F	G	I	L	L	hSrc	
433	K	F	P	I	K	W	T	A	P	E	A	A	L	Y	G	R	F	T	I	K	S	D	V	W	S	F	G	I	L	Q	hYes	
419	K	F	P	I	K	W	T	A	P	E	A	A	L	F	G	R	F	T	I	K	S	D	V	W	S	F	G	I	L	L	hFgr	
404	K	F	P	I	K	W	T	A	P	E	A	I	N	F	G	C	F	T	I	K	S	D	V	W	S	F	G	I	L	L	hLyn	
397	K	F	P	I	K	W	T	A	P	E	A	I	N	F	G	S	F	T	I	K	S	D	V	W	S	F	G	I	L	L	hHck	
401	K	F	P	I	K	W	T	A	P	E	A	I	N	Y	G	T	F	T	I	K	S	D	V	W	S	F	G	I	L	L	hLck	
390	K	F	P	I	K	W	T	A	P	E	A	I	H	F	G	V	F	T	I	K	A	D	V	W	S	F	G	V	L	L	mBlk	
424	Y	E	I	I	T	Y	G	K	M	P	Y	S	G	M	T	G	A	Q	V	I	Q	M	L	A	Q	N	Y	R	L	P	MKK3 MPI aa	
457	T	E	L	V	T	K	G	R	V	P	Y	P	G	M	N	N	R	E	V	L	E	Q	V	E	R	G	Y	R	M	P	hFyn	
456	T	E	L	V	T	K	G	R	V	P	Y	P	G	M	N	N	R	E	V	L	E	Q	V	E	R	G	Y	R	M	Q	cYrk	
456	T	E	L	T	T	K	G	R	V	P	Y	P	G	M	V	N	R	E	V	L	D	Q	V	E	R	G	Y	R	M	P	hSrc	
463	T	E	L	V	T	K	G	R	V	P	Y	P	G	M	V	N	R	E	V	L	E	Q	V	E	R	G	Y	R	M	P	hYes	
449	T	E	L	I	T	K	G	R	I	P	Y	P	G	M	N	K	R	E	V	L	E	O	V	E	Q	G	Y	H	M	P	hFgr	
434	Y	E	I	V	T	Y	G	K	I	P	Y	P	G	R	T	N	A	D	V	M	T	A	L	S	Q	G	Y	R	M	P	hLyn	
427	M	E	I	V	T	Y	G	R	I	P	Y	P	G	M	S	N	P	E	V	I	R	A	L	E	R	G	Y	R	M	P	hHck	
431	T	E	I	V	T	H	G	R	I	P	Y	P	G	M	T	N	P	E	V	I	Q	N	L	E	R	G	Y	R	M	V	hLck	
420	M	V	I	V	T	Y	G	R	V	P	Y	P	G	M	S	N	P	E	V	I	R	S	L	E	H	G	Y	R	M	P	mBlk	
454	Q	P	S	N	C	P	Q	Q	F	Y	N	-	I	M	L	E	C	W	N	A	E	P	K	E	R	P	T	F	E	T	MKK3 MPI aa	
487	C	P	Q	D	C	P	I	S	L	H	-	E	L	M	I	H	C	W	K	K	D	P	E	E	R	P	T	F	E	Y	hFyn	
486	C	P	G	G	C	P	P	S	L	H	-	D	V	M	V	Q	C	W	K	R	E	P	E	E	R	P	T	F	E	Y	cYrk	
486	C	P	P	E	C	P	E	S	L	H	-	D	L	M	C	Q	C	W	R	K	E	P	E	E	R	P	T	F	E	Y	hSrc	
493	C	P	Q	G	C	P	E	S	L	H	-	E	L	M	N	L	C	W	K	K	D	P	D	E	R	P	T	F	E	Y	hYes	
479	C	P	P	G	C	P	A	S	L	Y	-	E	A	M	E	Q	T	W	R	L	D	P	E	E	R	P	T	F	E	Y	hFgr	
464	R	V	E	N	C	P	D	E	L	Y	-	D	I	M	K	M	C	W	K	E	K	A	E	E	R	P	T	F	D	Y	hLyn	
457	R	P	E	N	C	P	E	E	L	Y	-	N	I	M	M	R	C	W	K	N	R	P	E	E	R	P	T	F	E	Y	hHck	
461	R	P	D	N	C	P	E	E	L	Y	-	Q	L	M	R	L	C	W	K	E	R	P	E	D	R	P	T	F	D	Y	hLck	
450	C	P	E	T	C	P	P	E	L	Y	N	D	I	I	T	E	C	W	R	G	R	P	E	E	R	P	T	F	E	F	mBlk	
483	L	R	W	K	L	E	D	Y	F	E	-	T	D	S	S	Y	S	D	A	N	N	F	I	R	MKK3 MPI aa							
516	L	Q	S	F	L	E	D	Y	F	T	A	T	E	P	Q	Y	Q	P	G	E	N	-	-	-	L	hFyn						
515	L	Q	S	F	L	E	D	Y	F	T	A	T	E	P	Q	Y	Q	P	G	D	N	-	-	-	Q	cYrk						
515	L	Q	A	F	L	E	D	Y	F	T	S	T	E	P	Q	Y	Q	P	G	E	N	-	-	-	L	hSrc						
522	I	Q	S	F	L	E	D	Y	F	T	A	T	E	P	Q	Y	Q	P	G	E	N	-	-	-	L	hYes						
508	L	Q	S	F	L	E	D	Y	F	T	S	A	E	P	Q	Y	Q	P	G	D	Q	-	-	-	T	hFgr						
493	L	Q	S	V	L	D	D	F	Y	T	A	T	E	G	Q	Y	Q	Q	-	-	Q	-	-	-	P	hLyn						
486	I	Q	S	V	L	D	D	F	Y	T	A	T	E	S	Q	Y	Q	Q	-	-	Q	-	-	-	P	hHck						
490	L	R	S	V	L	E	D	F	F	T	A	T	E	G	Q	Y	Q	P	-	-	Q	-	-	-	P	hLck						
480	L	Q	S	V	L	E	D	F	Y	T	A	T	E	G	Q	Y	E	L	-	-	Q	-	-	-	P	mBlk						

FIGURE 11D

**FIGURE 12**

### Growth Factor Response of MKK-1 Expressing L-8057 Cells

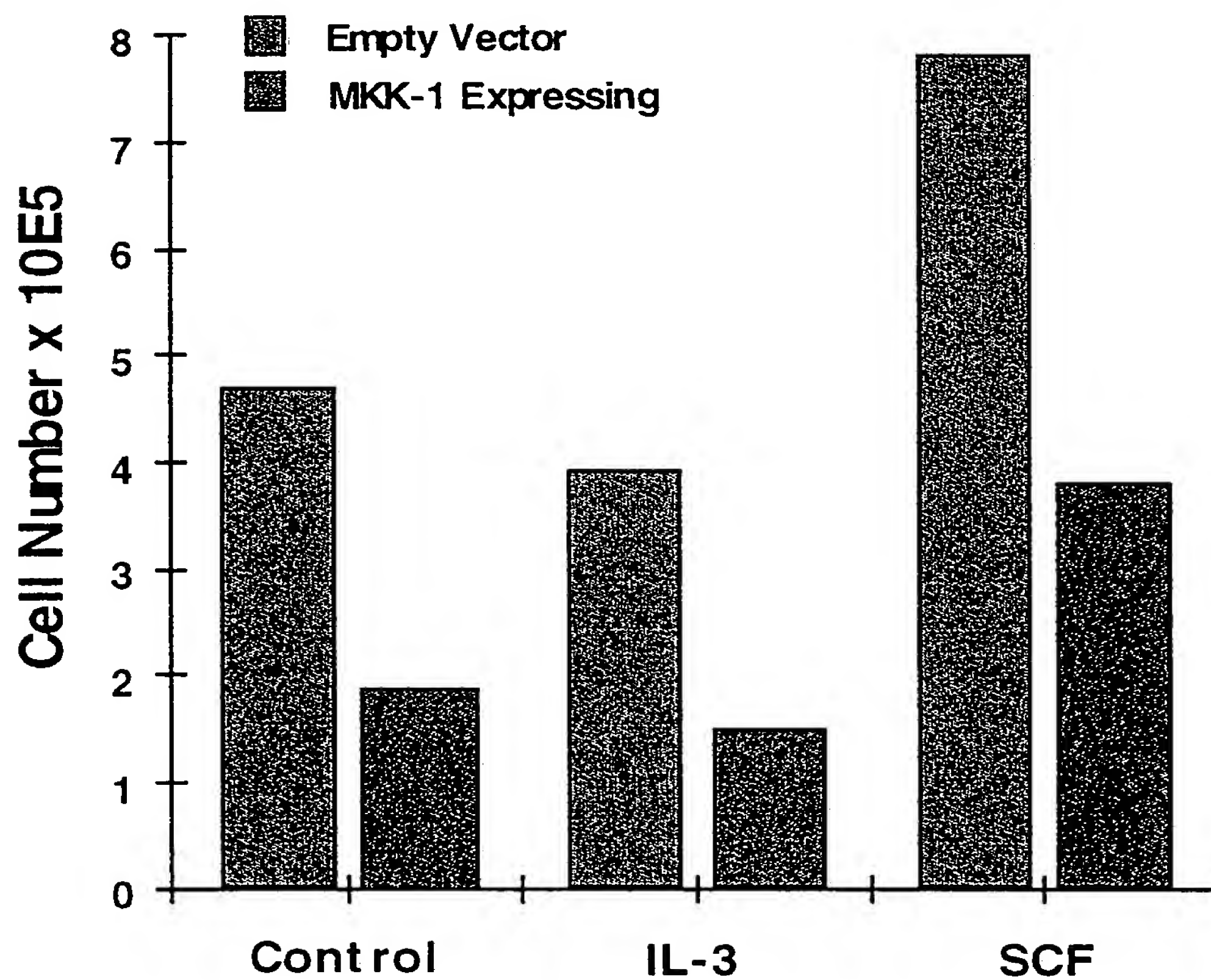
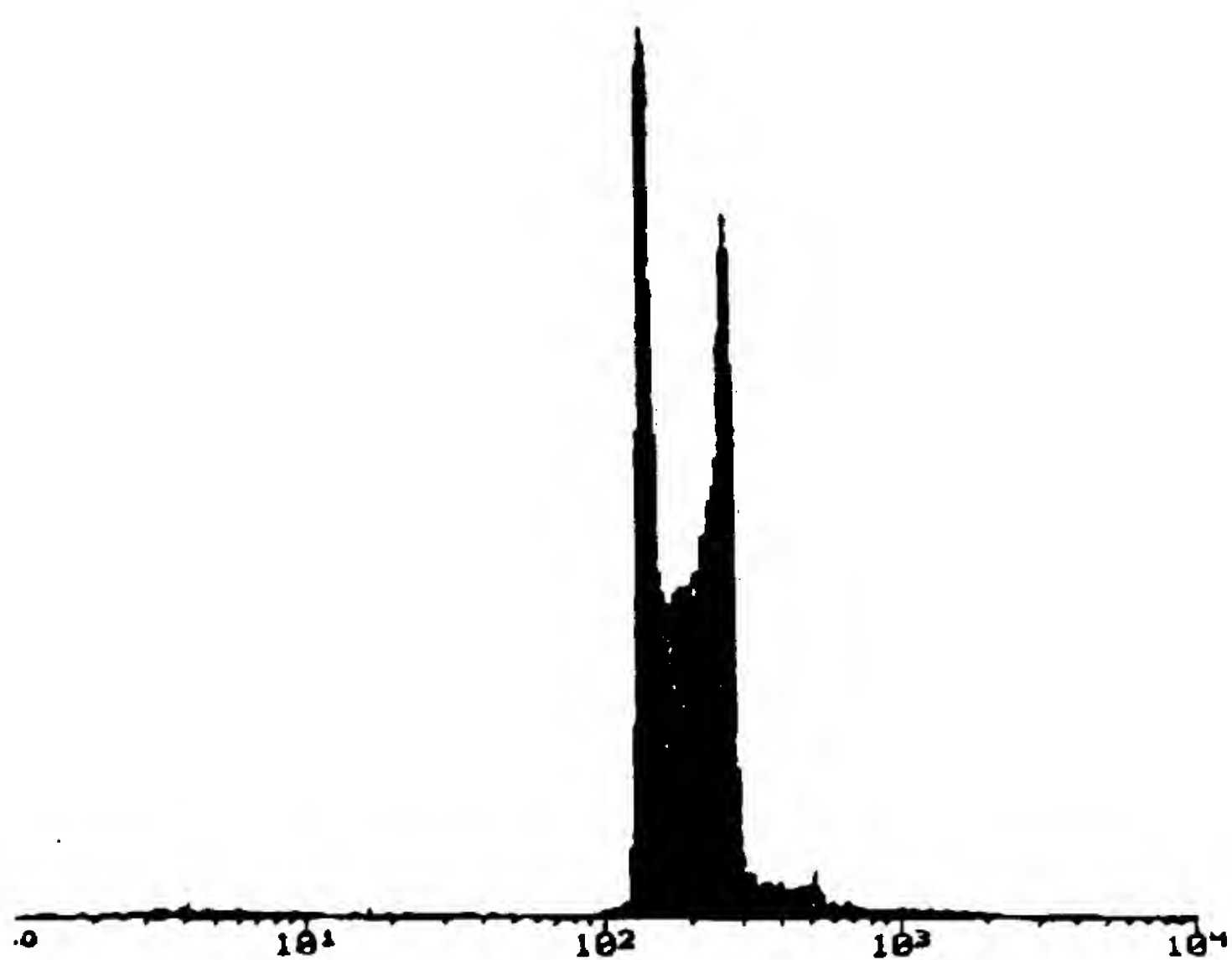


FIGURE 13

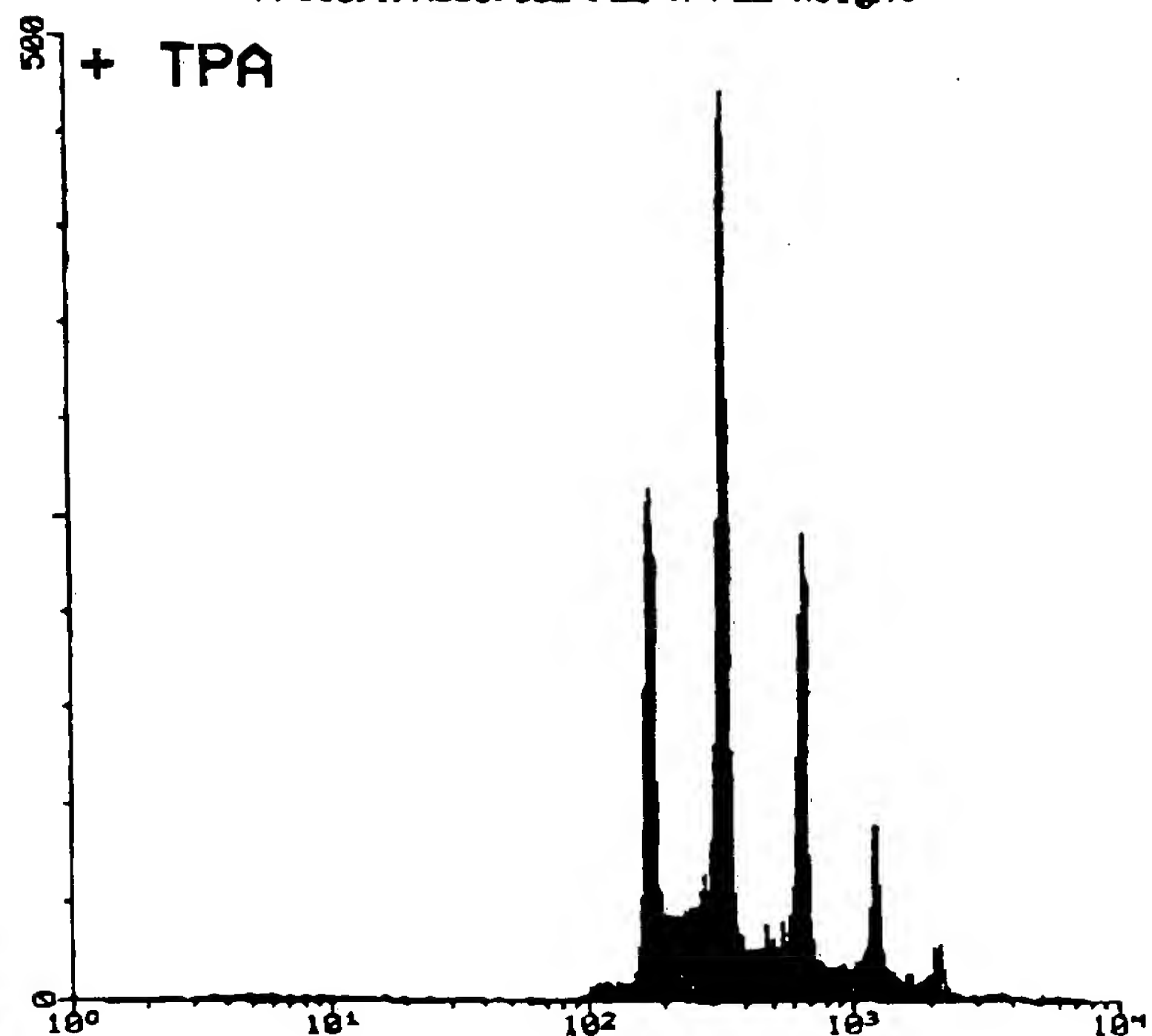
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CONTROL



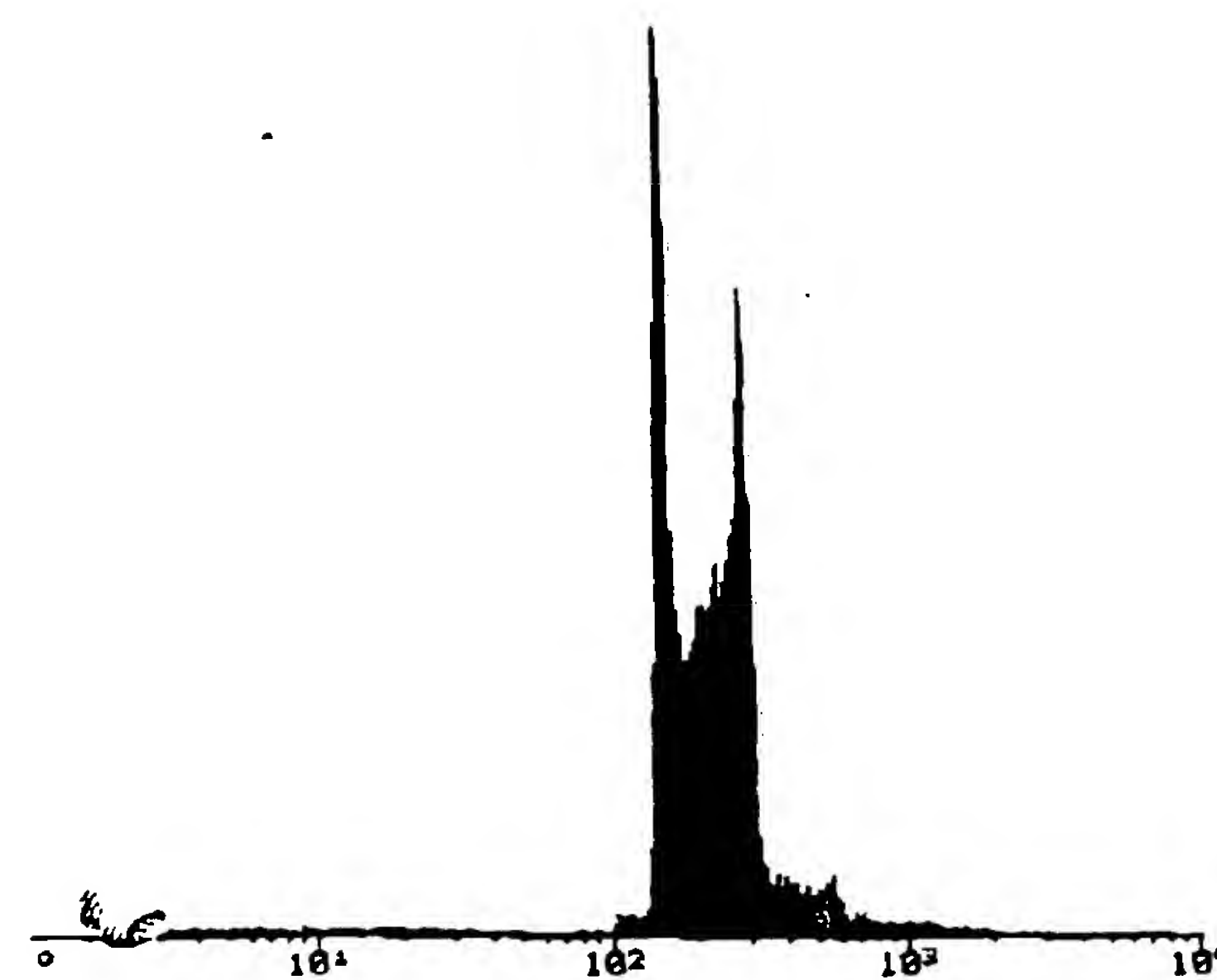
FACS37:FACS37002\FL2-H\FL2-Height

+ TPA



FACS37:FACS37003\FL2-H\FL2-Height

MKK-1



FACS37:FACS37004\FL2-H\FL2-Height

MKK-1 + TPA

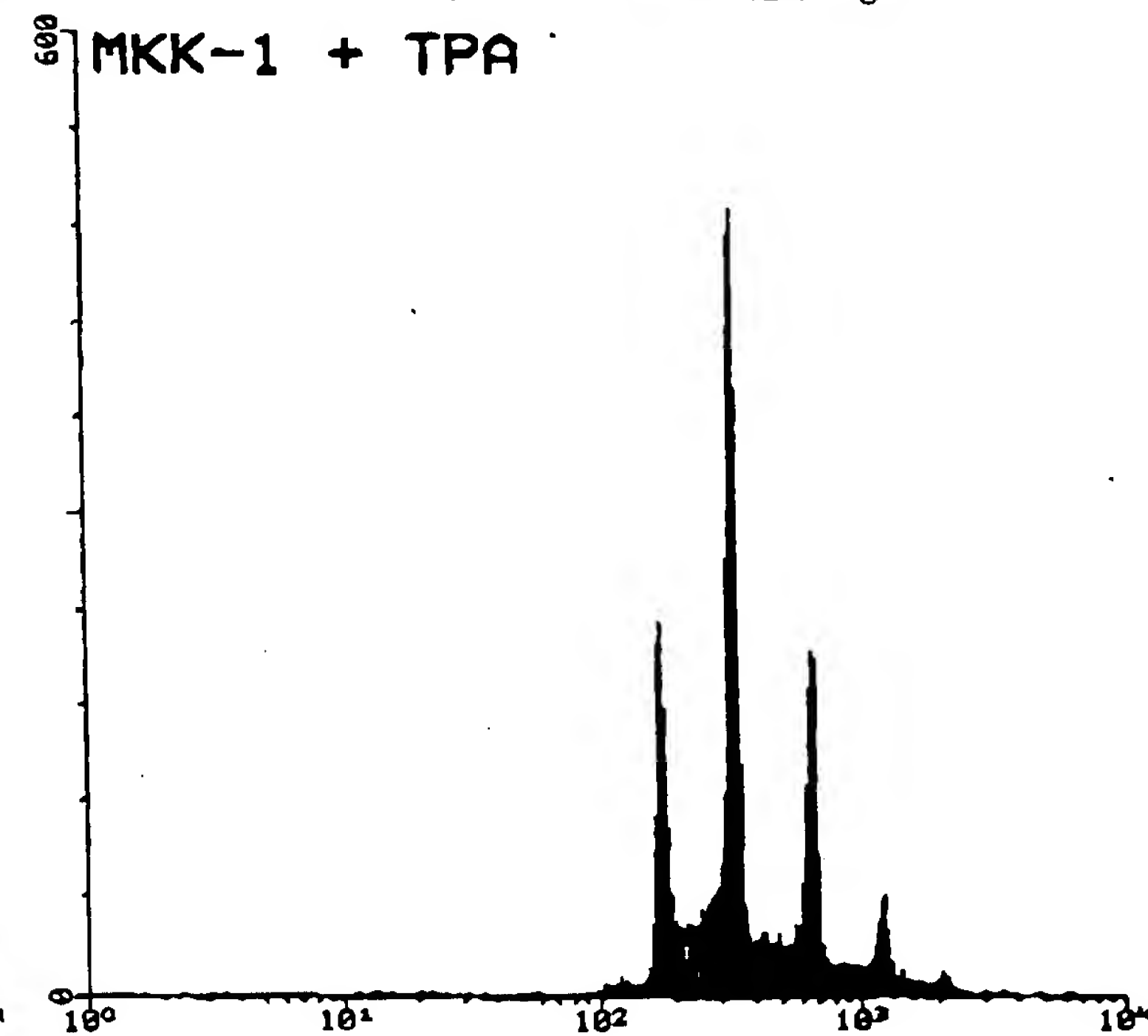


FIGURE 14